

## Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

- 1 1. (Presently Amended) A method for retaining error-control code protection across  
2 block-size discontinuities occurring between incoming information, having  
3 incoming data formatted into ingress data blocks and ingress headers, one  
4 ingress header associated with each ingress data block and conveying  
5 information about the each ingress data block, and outgoing information having  
6 the incoming data reformatted into egress data blocks with sizes different from  
7 the ingress data blocks and egress headers, one egress header associated with  
8 each egress data block and conveying information about the each egress data  
9 block, the method comprising:
  - 10 (a) generating a code check from data in an ingress data block and from an  
11 ingress header associated with the ingress data block;
  - 12 (b) generating a code check from the code check generated in step (a) and  
13 an a new egress header associated with an egress data block derived  
14 containing data from the ingress data block but having a different block  
15 size; and
  - 16 (c) generating the outgoing information by combining the egress header with  
17 the associated egress data block and code check generated in step (b).
- 1 2. (Previously amended) The method of claim 1 wherein step (b) comprises:
  - 2 (b1) generating a code check from the egress header;
  - 3 (b2) generating a code check by subtracting a portion of the code check  
4 generated from the associated ingress header in step (a) from the code  
5 check generated in step (b1); and

6 (b3) adding the code check generated in step (a) to the code check generated  
7 in step (b2).

1 3. (Original) The method of claim 2 wherein step (b2) comprises adding the inverse  
2 of the portion of the code check generated from the ingress header in step (a) to  
3 the code check generated in step (b1).

1 4. (Presently Amended) The method of claim 1 wherein step (a) further comprises:  
2 (a1) ~~modifying~~ rotating the code check generated from data in the ingress data  
3 block and the associated ingress header ~~to compensate for~~ by an amount  
4 equal to the number of non-data bits added to the a previous ingress data  
5 block.

5. Canceled.

1 6. (Original) The method of claim 1 wherein step (a) further comprises:  
2 (a2) modifying the incoming information to compensate for non-data bits added  
3 to the ingress data block.

1 7. (Original) The method of claim 1 wherein step (c) comprises concatenating the  
2 egress header with the associated egress data block and the code check  
3 generated in step (b).

1 8. (Previously Amended) The method of claim 1 wherein step (a) comprises  
2 generating the code check as a one's-complement sum of successive  $n$ -bit  
3 binary words included in the ingress data block and the associated ingress  
4 header.

- 1 9. (Previously Amended) The method of claim 1 wherein step (b) comprises  
2 generating the check code as a one's-complement sum of successive  $n$ -bit  
3 binary words included in the egress header.
- 1 10. (Previously Amended) The method of claim 1 wherein step (a) comprises  
2 generating the check code as a term-by-term modulo-two sum of successive  $n$ -  
3 bit binary words included in the ingress data block and the associated ingress  
4 header.
- 1 11. (Previously Amended) The method of claim 1 wherein step (b) comprises  
2 generating the code check as a term-by-term modulo-two sum of successive  $n$ -  
3 bit binary words included in the egress header.
- 1 12. (Previously Amended) The method of claim 1 wherein step (a) comprises  
2 generating the code check as the residue of the ingress data block and the  
3 associated ingress header modulo a generator polynomial.
- 1 13. (Previously Amended) The method of claim 1 wherein step (b) comprises  
2 generating the code check as the residue of the egress data block modulo a  
3 generator polynomial.
- 1 14. (Original) The method of claim 1 wherein the incoming information includes an  
2 incoming code check associated with each ingress data block and step (a)  
3 further comprises comparing the ingress code check to the incoming code check  
4 and generating an error when the ingress code check does not equal the  
5 incoming code check.
- 1 15. (Presently Amended) Apparatus for retaining error-control code protection across  
2 block-size discontinuities occurring between incoming information, having  
3 incoming data formatted into ingress data blocks and ingress headers, one  
4 ingress header associated with each ingress data block and conveying

5 information about the each ingress data block, and outgoing information having  
6 the incoming data reformatted into egress data blocks with sizes different from  
7 the ingress data blocks and egress headers, one egress header associated with  
8 each egress data block and conveying information about the each egress data  
9 block, the apparatus comprising:

10 an ingress encoder that generates an ingress code check from data in an  
11 ingress data block and from an ingress header associated with the ingress data  
12 block;

13 an egress encoder that generates a egress code check from an (1) a new  
14 egress header associated with an egress data block ~~derived~~ containing data from  
15 the ingress data block but having a different block size and ~~from~~ (2) the ingress  
16 code check; and

17 a multiplexer that generates the outgoing information by combining the  
18 egress header with the associated egress data block and the egress code check.

1 16. (Previously Amended) The apparatus of claim 15 wherein the egress encoder  
2 comprises:

3 an outgoing encoder that generates an egress code check from the  
4 egress header and from intermediate contents of the outgoing encoder;

5 a controller that subtracts a portion of the ingress code check generated  
6 from the associated ingress header from the outgoing encoder intermediate  
7 contents and adds the ingress code check to the outgoing encoder intermediate  
8 contents.

1 17. (Original) The apparatus of claim 16 wherein the controller further comprises a  
2 mechanism that modifies the ingress code check to compensate for non-data bits  
3 added to the ingress data block.

- 1 18. (Previously Amended) The apparatus of claim 16 wherein the controller  
2 comprises a mechanism that rotates the bits of the ingress code check to  
3 compensate for non-data bits added to the ingress data block.
- 1 19. (Original) The apparatus of claim 16 wherein the controller adds the inverse of  
2 the portion of the code check generated from the ingress header by the ingress  
3 encoder to the outgoing encoder contents.
- 1 20. (Original) The apparatus of claim 15 further comprising a mechanism that  
2 modifies the incoming information to compensate for non-data bits added to the  
3 ingress data block.
- 1 21. (Original) The apparatus of claim 15 wherein the multiplexer comprises a  
2 mechanism that concatenates the egress header with then associated egress  
3 data block and the egress code check.
- 1 22. (Original) The apparatus of claim 15 wherein the ingress encoder comprises a  
2 one's-complement encoder that generates a one's-complement sum of  
3 successive  $n$ -bit binary words included in the ingress data block and the  
4 associated ingress header.
- 1 23. (Original) The apparatus of claim 15 wherein the outgoing encoder comprises a  
2 one's-complement encoder that generates a one's-complement sum of  
3 successive  $n$ -bit binary words included in the egress header.
- 1 24. (Original) The apparatus of claim 15 wherein the ingress encoder comprises a  
2 vertical-parity-check encoder that generates a term-by-term modulo-two sum of  
3 successive  $n$ -bit binary words included in the ingress data block and the  
4 associated ingress header.

- 1 25. (Original) The apparatus of claim 15 wherein the outgoing encoder comprises a  
2 vertical-parity-check encoder that generates a term-by-term modulo-two sum of  
3 successive  $n$ -bit binary words included in the egress header.
- 1 26. (Original) The apparatus of claim 15 wherein the ingress encoder comprises a  
2 cyclic-residue-code encoder that generates the residue of the ingress data block  
3 and the associated ingress header modulo a generator polynomial.
- 1 27. (Original) The apparatus of claim 15 wherein the outgoing encoder comprises a  
2 vertical-parity-check encoder that generates the residue of the egress data block  
3 modulo a generator polynomial.
- 1 28. (Original) The apparatus of claim 15 wherein the incoming information includes  
2 an incoming code check associated with each ingress data block and the  
3 apparatus further comprises a comparator for comparing the ingress code check  
4 to the incoming code check and generating an error when the ingress code  
5 check does not equal the incoming code check.
- 1 29. (Presently Amended) A computer program product for retaining error-control  
2 code protection across block-size discontinuities occurring between incoming  
3 information, having incoming data formatted into ingress data blocks and ingress  
4 headers, one ingress header associated with each ingress data block and  
5 conveying information about the each ingress data block, and outgoing  
6 information having the incoming data reformatted into egress data blocks with  
7 sizes different from the ingress data blocks and egress headers, one egress  
8 header associated with each egress data block and conveying information about  
9 the each egress data block, the computer program product comprising a  
10 computer usable medium having computer readable program code thereon,  
11 including:

12           program code that generates an ingress code check from data in an  
13           ingress data block and from an ingress header associated with the ingress data  
14           block;  
15           program code that generates a egress code check from (1) the ingress  
16           code check and ~~an~~ (2) a new egress header associated with an egress data  
17           block ~~derived-containing data~~ from the ingress data block but having a different  
18           block size; and  
19           program code that generates the outgoing information by combining the  
20           egress header with the associated egress data block and the egress code check.

1   30.   (Previously Amended) The computer program product of claim 29 wherein the  
2           program code that generates an egress code check comprises:  
3                 program code that generates an egress code check from the egress  
4                 header;  
5                 program code that subtracts a portion of the ingress code check  
6                 generated from the associated ingress header from the egress code check; and  
7                 program code that adds the ingress code check to the egress code check.

1   31.   (Original) The computer program product of claim 30 wherein the program code  
2           that subtracts a portion of the ingress code check from the egress code check  
3           comprises program code that adds the inverse of the portion of the ingress code  
4           check to the egress code check generated.

1   32.   (Presently Amended) The computer program product of claim 29 wherein the  
2           program code that generates an ingress code check further comprises program  
3           code that ~~modifies~~ rotates the ingress code check ~~to compensate for~~ by an  
4           amount equal to the number of non-data bits added to the a previous ingress  
5           data block.

33.   Canceled.

1 34. (Original) The computer program product of claim 29 wherein the program code  
2 that computes the ingress code check further comprises program code that  
3 modifies the incoming information to compensate for non-data bits added to the  
4 ingress data block.

1 35. (Original) The computer program product of claim 29 wherein the program code  
2 that generates the outgoing information comprises program code that  
3 concatenates the egress header with the associated egress data block and the  
4 egress code check.

1 36. (Original) The computer program product of claim 29 wherein the program code  
2 that generates the ingress code check comprises program code that generates a  
3 one's-complement sum of successive  $n$ -bit binary words included in the ingress  
4 data block and the associated ingress header.

1 37. (Original) The computer program product of claim 29 wherein the program code  
2 that generates the egress code check comprises program code that generates a  
3 one's-complement sum of successive  $n$ -bit binary words included in the egress  
4 header.

1 38. (Original) The computer program product of claim 29 wherein the program code  
2 that generates the ingress code check comprises program code that generates a  
3 term-by-term modulo-two sum of successive  $n$ -bit binary words included in the  
4 ingress data block and the associated ingress header.

1 39. (Original) The computer program product of claim 29 wherein the program code  
2 that generates the egress code check comprises program code that generates a  
3 term-by-term modulo-two sum of successive  $n$ -bit binary words included in the  
4 egress header.



1 40. (Original) The computer program product of claim 29 wherein the program code  
2 that generates the ingress code check comprises program code that generates  
3 the residue of the ingress data block and the associated ingress header modulo  
4 a generator polynomial.

1 41. (Original) The computer program product of claim 29 wherein the program code  
2 that generates the egress code check comprises program code that generates  
3 the residue of the egress data block modulo a generator polynomial.

1 42. (Original) The computer program product of claim 29 wherein the incoming  
2 information includes an incoming code check associated with each ingress data  
3 block and wherein the program code that generates the ingress code check  
4 further comprises program code that compares the ingress code check to the  
5 incoming code check and generates an error when the ingress code check does  
6 not equal the incoming code check.

1 43. (Previously Amended) A computer data signal embodied in a carrier wave for  
2 retaining error-control code protection across block-size discontinuities occurring  
3 between incoming information, having incoming data formatted into ingress data  
4 blocks and ingress headers, one ingress header associated with each ingress  
5 data block and conveying information about the each ingress data block, and  
6 outgoing information having the incoming data reformatted into egress data  
7 blocks with sizes different from the ingress data blocks and egress headers, one  
8 egress header associated with each egress data block and conveying  
9 information about the each egress data block, the computer data signal  
10 comprising:

11 program code that generates an ingress code check from data in an  
12 ingress data block and from an ingress header associated with the ingress data  
13 block;

14           program code that generates a egress code check from (1) the ingress  
15       code check and an (2) a new egress header associated with an egress data  
16       block ~~derived~~ containing data from the ingress data block but having a different  
17       block size; and  
18           program code that generates the outgoing information by combining the  
19       egress header with the associated egress data block and the egress code check.